

DOCUMENT RESUME

ED 403 473

CE 073 492

TITLE Workforce Issues.
PUB DATE 96
NOTE 31p.; In: Academy of Human Resource Development (AHRD) Conference Proceedings (Minneapolis, MN, February 29-March 3, 1996); see CE 073 480.
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143) -- Reports - Descriptive (141)
EDRS PRICE MF01/PC02 Plus Postage.
DESCRIPTORS Adult Education; Adult Educators; Basic Skills; Behaviorism; Educational Research; Employer Attitudes; Factor Analysis; Foreign Countries; Holistic Approach; *Job Training; *Labor Force Development; *Literacy Education; Needs Assessment; Skill Development; *Teacher Attitudes; Technological Advancement; Vocational Education; *Work Environment; *Work Ethic
IDENTIFIERS Canada

ABSTRACT

This document consists of four papers presented during a symposium on work force issues moderated by Jan DeJong at the 1996 conference of the Academy of Human Resource Development (AHRD). "Rethinking the Ties that Bind: An Exploratory Study of Employee Development in Utilities in Canada and the United States" (Michael Aherne, David Barron) reports results of interviews with employee development specialists that point toward the limiting effect on HRD practice of beliefs in behaviorism and the administrative nature of HRD. "A Study of the Need for Literacy Skills Improvement in a High Technology Company" (Rosemarie J. Park) reports on a 3-year project to upgrade employees' basic skills that found workers needed more help in mathematics than in reading, but basic skills deficiencies were less than those in the population as a whole. "Essential Elements of Work: A Factor Analysis of the Occupational Work Ethic" (Gregory C. Petty, Roger B. Hill) identifies four factors that can be used in training programs for instruction in work ethic components: working well with others, striving for advancement/success, being dependable, and unconditional acceptance of duty. "Towards an Ecology of Soul in Work: Implications for HRD" (John M. Dirkx, Terri A. Deems) explores implications for HRD practitioners of an ecology of soul in work that involves understanding the deep and holistic relationship between the worker and the work environment. Papers contain references. (YLB)

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SYMPOSIUM
[11] WORKFORCE ISSUES
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**Rethinking the Ties that Bind: An Exploratory Study of Employee
 Development in Utilities in Canada and the United States**
 Michael Aheme, University of Alberta, Edmonton, Canada
 David Barron, University of Alberta, Edmonton, Canada

**A Study of the Need for Literacy Skills Improvement in a High
 Technology Company**
 Rosemarie J. Park, University of Minnesota

Essential Elements of Work:
A Factor Analysis of the Occupational Work Ethic
 Gregory C. Petty, University of Tennessee-Knoxville
 Roger B. Hill, University of Georgia

Towards an Ecology of Soul in Work:
Implications for Human Resource Development
 John M. Dirkx, University of Nebraska
 Terri A. Deems, University of Nebraska

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Academy of Human Resource Development
1996 Conference
Minneapolis, MN
February 29-March 3, 1996

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Rethinking The Ties That Bind: An Exploratory Study of Employee Development in Utilities in Canada and the United States.

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To investigate the concern that underlying assumptions and beliefs were seriously limiting practice, the authors conducted telephone interviews with eleven employee development specialists in gas and electricity utilities in the U.S. and Canada. The results of the study point towards the limiting effect on HRD practice of beliefs in behaviorism and the administrative nature of HRD. This study also highlights the need for HRD practitioners to further comprehend the complexities of employee development.

This exploratory study was conceived, in part, to investigate the growing perception that human resource development (HRD) interventions are becoming increasingly uncoupled from organizational development needs. Under central consideration was the idea that there are ties that bind HRD from being more effective as a strategic organizational resource. Specifically, we wondered to what extent HRD practice was bound by long-established and widely-held preconceptions among HRD practitioners about the nature of organizational structures and processes.

Indeed we were prompted to consider the suggestion that HRD practitioners may well be working from conceptual perspectives of the ties that bind an organization together which may no longer be in alignment with organizational realities. It seemed to us that HRD practitioners have long regarded the organizational chart as the embodiment of organizational reality and have based their practice on strengthening the ties captured in this chart. Yet the organizational chart, as a static, linear, one-dimensional diagram can in no way account for the powerful, dynamic processes which characterize the social and political nature of organizational life. These dynamic processes tie an organization together in ways that are subtle and complex, and, in contrast to the explicit formal ties of the organizational chart, are very informal and highly abstract.

Recent rethinking in the area of organizational development underlines the need to uncover and make explicit the real ties which bind an organization together. Only if these ties are identified can they be constructively developed. Yet it seems that an understanding of these dynamic ties is only in its infancy within the field of HRD scholarship. A rudimentary or negligible understanding of the actual relationships within organizations has in many instances affected the way that leadership responsibility has been conceived and distributed.

One important consequence of this limited view of organizational life has been a tendency to invest scarce financial and organizational resources in the maintenance of a hierarchical entity. Indeed there often appears to be a disproportionate emphasis on the organization itself rather than on the mission of the organization (Drucker, 1995). In times of fundamental change, focusing on shoring up organizational structures instead of rethinking the needs of business and how to best organize to serve those needs may well prove fatal.

Yet another tie that binds practice is the web of underlying assumptions and implicit beliefs which color organizations' members' views of their own HRD function. Some organizational members look to employee development as a universal savior to virtually any organizational issue. Others see it as offering poor value for money, yet as a necessary evil in the absence of few alternative solutions. A proliferation of perceived "flavor of the month solutions", prescribed by corporate warriors from the burgeoning management consulting industry, has further polarized perceptions of the effectiveness of HRD. The appearance of a growing disconnection between HRD and organizational effectiveness could well result in a dangerous erosion of the integrity and credibility enjoyed by HRD practitioners among stakeholders.

A new climate characterized by the need to proactively manage recurring, discontinuous change prompts a reexamination and reinterpretation of long-held, subtle beliefs (Handy, 1994). For example, Senge (1990) advocates the need for those involved in managing transformational change to have embarked on their own process of transformation beforehand. Indeed, Drucker (1995) insists that before the end of the century the concept of the organization as we now understand it will require fundamental revision. Therefore a careful reexamination of what HRD practitioners believe and practice is critical to the profession's capacity to effectively serve a range of emerging organizational challenges brought about by increasingly complex and volatile business environments.

Methodology

This study was deliberately exploratory in nature. It was intended to clarify basic questions about contemporary HRD practice while also serving as a basis in clarifying the researchers' thinking for subsequent in-depth studies concerning formal and informal learning in professional engineering practice and organizational learning in the Canadian petrochemical industry. A benchmarking study (Flower, 1993) was used to gather information from eleven gas and electrical utility companies in two Canadian provinces and six US states. In early 1995, semi-structured telephone interviews were held with HRD practitioners responsible for employee development in each company. In addition to the telephone survey, in-depth interviews on the nature of organizational learning were held earlier in the year with members of a local telecommunications utility which was in the process of been reorganized from a state-owned enterprise to a publicly traded company. We believed that lessons learned in telecommunications could be useful to other infrastructure industries encountering rapid and fundamental reorganization.

Gas and electrical utility companies from a range of markets delineated by different regulatory regimes were chosen for the study since we believed the perception about the degree of competitiveness in an industry was a critical consideration in examining how companies with similar business missions used HRD interventions to respond to emerging business challenges. Utilities are one of the few remaining infrastructure industries in North America where it is relatively easy to isolate markets ranging from relatively benign to highly competitive. It appeared to us that deregulation, or even the perception of imminent deregulation, has been prompting many companies to reconceptualize what employee development is, where it occurs, and how it is facilitated.

The study was guided by the following questions:

- What are the philosophical orientations and current practices related to employee development in the selected organizations?
- What are major internal and external influences which drive employee development philosophies and needs?
- What processes are being used to define and respond to changing employee development needs?

For the purposes of this study, the ASTD definition of employee development as given in Rothwell and Sredl (1992) was felt to be too narrow, since it specifies the use of "planned learning" (p.7). We broadened this definition to include all activities in which individuals and teams engage to more effectively meet organizational objectives.

Findings

The findings of this exploratory study are presented with reference to the questions which guided the research.

Philosophical Orientations and Current Practices Recent employee development activities in the 12 companies studied underlined several emerging leadership issues. While technical training and development was well established, employee development, as a new area, was often organized as a separate entity under the human resource development umbrella. In six of the companies, employee development, as a separately-organized function, constituted a new organizational initiative. Commissioning new units to address employee development issues which exceeded the scope of traditional training and development was seen as an important political

and structural organizational response. The companies researched indicated that employee development had only become a pressing concern for them in the six to eighteen months prior to this study.

Employee development needs were most frequently identified in the area of soft skill development. Effective communication, coaching, mentoring, and negotiating skills were reported as areas of particular need. Research participants saw these skills to be required by a wide range of members in the companies, especially front line staff and supervisors. Consistent with the shift to a broader definition of HRD, participants reported a move to establish demonstrable leadership competencies. Interpersonal, technical, business, and overall leadership skills were four basic categories into which the study participants grouped leadership competencies. All the organizations surveyed expected their members to demonstrate greater responsibility for the achievement of organizational results. Those results would be measured against demonstration of the leadership competencies. A variety of performance management systems were being considered by the companies to assist in operationalizing this concept.

All companies in the study reported that broadening the scope of employee development was occurring through a process of gradual evolution. Technical training issues had previously dominated employee development agendas due to the engineering and infrastructure orientation of gas and electricity utility operations. Within this framework, employee development for management had been organized around formal management development and succession planning programs. These programs tended to focus on high-potential managers who were being considered for officer level roles. Several participants reported that their organizations were in the process of rethinking this approach to employee development, giving as reasons questionable return on money invested and concern about the effectiveness of formal management development in a rapidly transforming business environment.

One very important consideration, often seen as a complicating factor, for employee development in utility companies was the complexity presented by organized labor environments. Only two companies in the study explicitly viewed union leaders as important partners in rethinking employee development. Working effectively within a unionized operating environment to achieve organizational results may be one of the most interesting political and logistical challenges HRD practitioners face in the utility industry.

Influences Driving Development Philosophies and Needs With one exception, deregulation and imminent deregulation of gas and utility markets was identified as the primary catalyst for rethinking employee development. Deregulation was not universal in its form or process. Nevertheless, being presented with the possibility of greater competition prompted many companies to reexamine their business environments, including a review of how the organization and its members were positioned to respond. The realization that business was becoming more complex and volatile was a further influence. Greater direct competition, changing customer expectations, increasingly hostile ratepayers, legal and social concerns about the environment, and changing expectations among employees were cited as other themes influencing employee development.

Major internal corporate influences on employee development arose out of organizations' attempts to put in place systems for realizing systematic continuous improvement. Three companies reported that their Total Quality Management (TQM) processes had uncovered significant employee development deficiencies. Substantial restructuring and downsizing in many companies revealed that front-line staff and supervisors were being expected to accept important organizational decision-making responsibility, often with a lack of the necessary skill sets. Executive-level sponsorship of employee development as a major senior management priority was also reported as a crucial internal influence for rethinking employee development.

Processes of Employee Development Participants in this study viewed employee development as the primary means by which to implement leadership competencies. Action research methods, ranging from basic fact-finding to elaborate consultative exercises involving a range of organizational stakeholders, reflected the processes used to identify corporate leadership competencies. The study also highlighted the importance of senior leaders playing an active role in redefining employee development as a critical lever for achieving organizational results. These results were increasingly linked to prescribed corporate strategic directions.

The majority of companies surveyed described a range of formal, classroom-based stand-up training techniques as the primary means for implementing employee development initiatives. These techniques ranged from in-house supervisory development programs to off-the-shelf front-

line leadership programs. Indeed most companies reported using a combination of custom-designed and off-the-shelf formal training programs.

Only one respondent in the study identified the combination of formal and informal activities as a powerful development tool. This respondent described a process of regular in-house executive lunches, with expert speakers facilitating dialogue on a range of topics of emerging corporate concern, complemented by informal dialogue among the participants. These activities were reported as an important catalyst for the development of more effective communication within this particular organization.

Discussion

The findings from this study indicate that employee development has become an urgent priority for companies in infrastructure industries. However while it is undeniably a good sign that the practitioners in the companies studied were aware of, and were actively engaged in, working on emerging employee development issues, an analysis of the information these practitioners gave also begins to reveal the ties which bind their practice.

The widespread use of behaviorist, control-oriented language characterized the responses of all the HRD practitioners interviewed in this study. We further discovered a widely-held belief by many practitioners that organizationally-developed and prescribed leadership competencies should drive the behaviors of line staff and management. It is significant for us that no participant made mention of the need to actively engage people fully as human beings in their work or to provide sufficient transitional support for organizational members to assist them respond to fundamentally different workplace expectations. We identify here an important tie that binds, the underlying basis for which can be found in behaviorism. This is, of course, not a radical new insight. Indeed it has been noted that the roots of HRD lie firmly embedded in behaviorist psychology (Goldstein, 1980). The critical question that must be asked, however, is to what extent HRD practice founded on behaviorism, with its accompanying linear, simplistic and mechanistic world view, remains effective in the rapidly changing world of the '90s? In fact, there appear to be serious limitations to employee development grounded in a behaviorist approach. As Marsick (1988) points out:

...behaviorism does not foster the reflective abilities needed to assist people at all levels to learn in the workplace, particularly in their informal interactions, although such training might successfully develop specific skills (p. 187).

It is indeed very difficult to reconcile a view of learning based on stimulus and response with the need to facilitate reflection and learning in the workplace. At best HRD interventions grounded in behaviorism can only invite reaction to predetermined stimuli. However such an approach does little to unleash the innovation and creativity increasingly required in a range of modern enterprises during times of rapid, structural change (Handy, 1994). In short, behaviorism as a dominant influence on approaches and methods in HRD ties the hands of HRD practitioners.

It is indeed alarming that an over-reliance on behaviorism in HRD practice has resulted in such a dependency on formal training that for many people the terms "employee development" and "training" seem synonymous. The overwhelming majority of participants in this study reported using formal methods to implement new employee development initiatives. In fact only one person interviewed recognized the power of informal methods in employee development. Indeed the methods traditionally used for employee development have been almost exclusively formal, stand-up training interventions (Marsick, 1988). There has been little incentive to promote other development practices. For a number of reasons, practitioners have been very comfortable with formal training. The method is still widely, though uncritically, accepted as neatly "scientific". The results of formal training are thus believed to be accurately measurable, and therefore provable. Furthermore, formal training has always been perceived as relatively easy and efficient in its administration. Last but not least, this essentially transactional process (Galbraith, 1990) offers a method by which HRD practitioners can exercise creativity and control over the development process. From our perspective, though, a continued emphasis on the use of formal HRD interventions seriously limits effective practice, since these formal interventions on their own are highly unlikely to facilitate transformational changes to deeply rooted attitudes, and therefore to effect major changes in behavior.

Nevertheless, formal training interventions may appear successful in certain employee development situations, notably those involving the transfer of technical information. The major

limitation of formal HRD interventions, however, is that they fall short on incorporating the operational and political dynamics of the primary place of work. Additionally, formal interventions also fail to incorporate much of what has recently been advanced about workplace learning. Watkins and Marsick (1992) noted:

Workplace learning involves a social contract among individuals who work together to achieve higher-order organizational goals. Learning often takes place in teams, and is spread throughout the organization by groups that cross boundaries and share their insights so that learning can be captured, collected, and embedded in change in the system, policies, or procedures (p. 292).

What is needed, in part, is a broader conception of employee development which enables stakeholders to understand that learning occurs in a variety of settings and forms and can be facilitated through a range of formal, informal, and incidental means.

We also identified a factor which further complicates the dynamics of HRD practice and presents another tie that binds. It became clear in the process of this study that HRD in most organizations has traditionally fallen under the domain of the global human resources function. This has led to HRD being devised and practiced as a primarily administrative function: conceptually a function that manages an input of production, albeit an important one. Interestingly though, when performance and people-related problems have occurred in operational functions, line managers and senior leaders have demonstrated remarkable proficiency in labeling these problems as human resource problems. Human resource practitioners have in turn become quite efficient at prescribing HRD interventions as a universal prescription for dealing with a myriad of organizational issues.

The problem with a primarily administrative conception of HRD is that most important organizational issues are operational and strategic in nature, not administrative. Indeed the limited scope of most HRD interventions (i.e., classroom-based, stand-up training; off-the-shelf packages), and the historic disconnection between an organization's operations and HRD practice often confound efforts for achieving timely, anticipated organizational results. The primary place of work is likely a more effective place to tackle many of these issues. This is particularly so if one considers that accountability for many "human resource" issues is more likely to legitimately reside among line staff and leaders than with HRD practitioners. This, however, by no means implies a diminishment in the role of the HRD practitioner; in fact quite this view advocates quite the opposite. HRD practitioners are now challenged to rethink their role as no longer being fundamentally administrative. In a strategic role, HRD practitioners have an important, if not vital, mainstream contribution to make to the achievement of organizational results.

In order to become effective strategic partners with line functions, HRD practitioners will need to involve themselves in a careful examination of their own beliefs about HRD practice and their organization's business (Argyris and Schon, 1974). Additionally, HRD practitioners will need to deepen their understanding of what is known regarding adult learning (Brookfield, 1985), including developing a greater awareness of when, where, and how learning occurs in organizations (Marsick and Watkins, 1990). Indeed Argyris (1991) has suggested:

Any company that aspires to succeed in the tougher business environment of the 1990s must first resolve a basic dilemma: success in the marketplace increasingly depends on learning, yet most people don't know how to learn. What's more, those members of the organization that many assume to be the best at learning are, in fact, not very good at it... Most companies not only have tremendous difficulty addressing this learning dilemma; they aren't even aware that it exists. The reason: they misunderstand what learning is and how to bring it about (p. 99).

The self-perception of HRD practitioners as intelligent, valuable organizational resources may inhibit their disposition to engage in critical self reflection regarding the efficacy and appropriateness of their roles within an organization (Mezirow, 1991). Furthermore, since many HRD practitioners have perceived themselves as the gatekeepers and stewards of important information which organizational members require to perform, many may also exhibit the traits of defensive reasoning (Argyris, 1991) in an attempt to protect perceived loss of status and power. Nevertheless, in turbulent times of transformational change, ignoring the dynamics of change no longer becomes a viable option, while actively resisting change can only lead to marginalization.

Another fundamental concern arising from this study is that while many HRD practitioners espouse to be aware of, and involved with, gearing their activities to organizational strategy, we found little consistent evidence of this in their practice. Herein is a central conceptual

point for HRD scholars and practitioners to consider. It may well be that the theories of practice which HRD practitioners espouse do not consistently reflect their action in practice (Argyris and Schon, 1974).

An interrelated factor we identified which likely restricts an HRD practitioner's ability to achieve role redefinition may well be the political dynamics surrounding HRD in many organizations. These dynamics have led to polarized thinking about the function and utility of HRD. As Jolles (1995) notes "it seems in corporate America, you either believe in the idea of training, or you do not" (p.52). For us, this dichotomy embodies the behaviorist view in an overly simplistic representation of HRD as consisting of either supposedly useful training or supposedly useless training. Furthermore, we regard this dominant view of HRD as representative of a world view which uses reductionism to establish absolute truth. As long as HRD practitioners seek truth in simplification, their practice will be markedly limited. We suggest that a guiding principle of the new role of HRD practitioners should be one of beginning to see themselves as facilitators of complex non-linear processes, comprised of interactive dynamics which far transcend the simplicity of the organizational chart. In this way it should be possible to identify and work with complexity in manageable amounts rather than to somewhat naively seek simple solutions to complex situations.

Complexity of the Ties that Bind The emerging dialectic on workplace learning and the need for a careful reexamination of contemporary HRD practice is a critical first step. In this study, it was clear that most companies surveyed saw employee development as a crucial lever in enabling them to achieve organizational results in a changing business environment. What was also clear from our interpretation of the findings, is that the overwhelming majority of practitioners surveyed seemed unaware of the complexity of the employee development situations they were presented with and the range of activities that might be employed to facilitate individual, team, and organizational learning.

There are important implications arising out of the possibility that HRD practitioners hold the key to many of the ties that bind modern organizations. This suggestion invites a critical analysis of HRD's role in organizations. It prompts consideration that employee development may be the only really effective means for transformational change. It requires a much broader conception regarding the form of employee development and the place where development occurs (Marsick and Watkins, 1990). It further challenges a range of organizational stakeholders to consider that employee development as it is presently practiced may be seriously misaligned with what we have more recently discovered about how adults learn (Brookfield, 1985). Future employee development models may more effectively be conceived as an integrated continuum of activities ranging from formal to highly informal. Indeed any future model will have to recognize the importance of incidental, i.e. informal and unplanned, learning in the workplace. In this sense, HRD practitioners and organizational stakeholders are challenged to reevaluate the assumptions they hold about the role and place of HRD, if HRD is to maintain credibility within organizations.

At another level, there is a challenge to understand that the structural nature of organizations as characterized by the relationships within and among organizations is also rapidly changing. The hierarchical, monolithic organization characterized by a one-dimensional organizational chart is gone forever (if indeed it ever really existed in the first place). Relationships within and among organizations are creating new ties, some which bind, but many which liberate. These are partially characterized by Handy's (1994) metaphor of the Shamrock organization as an organization with a much smaller cadre of core staff, growing ranks of temporary and part-time workers, and in which all non-essential work is contracted out. This more pluralistic organizational form also introduces new complexities for how work is organized and for understanding how organizational learning occurs. Human resource development practitioners and scholars are challenged to examine how the changing nature of organizations can be more clearly understood and explained. Applied scholarship to inform theory and practice in this area is most likely to be effective if it is descriptive rather than normative and is grounded more firmly in the traditions of action science (Argyris, Putnam, and Smith, 1985).

Conclusions

Our research uncovered several interesting findings from practice that can be used to guide scholarship and practice in human resources development. Although many HRD practitioners have

realized the importance of employee development, they may not have done so with an explicit awareness of the assumptions underlying their practice, as well as the full extent of the organizational context. Indeed HRD practitioners could easily become their own worst enemies by advancing a limited conception of employee development as a prescription for a range of complex and ill-defined organizational issues without first explicitly defining the ties that bind. Developing skills for critically reflecting upon their own practice is crucial to the credibility and integrity of HRD practitioners. An examination of assumptions underlying practice can be an important first step in rebuilding HRD as a strategic organizational resource (Argyris, 1991; Mezirow, 1991). What might have been considered good practice at an earlier stage of the field's development may no longer be effective for a business environment characterized by greater volatility and transformation (Drucker, 1995).

The results of this study also lend support to the concern there is an intellectual and ethical problem in HRD which is approaching a crisis stage. The credibility of HRD practitioners as facilitators of organizational change has come under greater scrutiny as "flavor of the month" approaches such as ill-conceived quality management and reengineering initiatives, and more recently the learning organization, have fueled cynicism within organizations and throughout the HRD field. As organizational operating environments become more complex and volatile, as companies continue to restructure and reorganize relationships, and as customers' expectations increase, it appears that a broad-based approach to employee development which integrates the range of formal, informal, and incidental learning in organizations may well be a critical lever for organizational survival and prosperity.

Organizational members at all levels need effective support and encouragement to make recurring transitions and transformations. North American HRD scholars and practitioners are encouraged to rethink their assumptions about the role and function of HRD. This includes creative new thinking and dialogue regarding the range of initiatives which can be encouraged to unleash the range of learning in organizations. Radical times call for radical thinking. Evolutionary thinking and implementation of traditional HRD initiatives in revolutionary times will most likely result in a prescription for disaster (Larson and Mingie, 1992).

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A Study of the Need for Literacy Skills Improvement in a High Technology Company

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This study reports on a three year project undertaken by a high technology company to upgrade the basic skills of its employees. The need for a workforce literacy program, the attitudes of the employees to basic skills classes, and the effectiveness of the classes were evaluated. Workers needed more help in mathematics than in reading. However, basic skills deficiencies were less than those in the population as a whole.

The need for workplace literacy programs that teach foundational skills to employees has been documented in nearly all major policy arenas. Human capital investment in the lower non-management segment of the workforce has been championed by the US Department of Labor and by such prominent workforce and educational organizations as ILO, Unesco, ASTD (Carnevale, Gainer, and Meltzer, 1990). Recent research and writing sponsored by the World Bank (Berryman, 1994) the OECD (Cappelli and Rogovsky, 1995; Hirsch and Wagner, 1993) focuses on the benefits of foundational skills training to employers and to employees. Berryman argues that the foundational skills of adults affect not only the wealth of individuals but also nations directly through the often invisible and poorly measured human capital producing mechanism of employer sponsored training. The advocates of these foundational programs at a national and international level seem convinced of their value, despite lack of any proof that programs have a track record of improving either business efficiency or worker satisfaction with their situations (Hull, 1993).

The case can be made that improvement in the foundational skills of the workforce is especially crucial in heavy manufacturing industries undergoing radical change in production methods. The need for workforce literacy in high technology production where the assumption is that workers have more education and training is less clear. Most research on workforce literacy programs has taken place in industry employing lower skilled workers, such as textile mills or heavy manufacturing (Hart-Landsberg Reder, 1993). Most targeted industries have also been those that are located in states with high drop-out rates, with lower rates of literacy, or with large numbers of workers for whom English is not their first language. Most research and writing in this area has also been limited to reports of program implementation (Sticht, 1995) or evaluation design, and omits any actual data on program results (Mikulesky & Taylor, 1994). Research needs to be done to determine the specific industries that benefit from workplace literacy and those where no intervention is needed.

Not only is research lacking, but there is no agreement on techniques to assess literacy levels in the workforce. Most writers describe levels needed in terms of grade level equivalents. Carnevale suggests the target population for job literacy programs, "would be that majority of workers who are intermediate literates with fourth to eighth grade literacy equivalency." (Carnevale, Gainer, and Meltzer, 1990, p.78). However, as Sticht (1990) points out in his review of testing and evaluation in adult literacy general literacy of the type taught and tested in grade schools and the specific forms of literacy needed at work are different. A test of general literacy exemplified by most standardized tests will not necessarily measure the specific literacy skills used in specified jobs. But developing tests of the literacy needed for each separate job specification is expensive and difficult to validate. In some cases the courts have held that these tests are illegal (Park, Dawis, 1986).

The Purpose of the Study

This case study describes a three year workforce literacy project in a high technology company. The management recognized the need for developing a skilled workforce and was willing to undertake a broad workforce literacy program, if one were warranted. Before the company started on the project it was necessary to find out first whether a workforce literacy program was needed. Did the workers actual skill levels match those of the job requirements? Did the workers themselves see any need for skills improvement, and would they take part in skills improvement programs if they were offered? We also collected information on educational level, occupational classification, and age to see how these variables influence the need for, and attitude of workers towards improvement of basic or foundational skills. Second, we developed a workforce literacy program for those workers who needed it. We evaluated the learner outcomes of classes and the company satisfaction with the final product. We framed our study around the following questions:

1. Do workers in high technology manufacturing in a region of the country with high literacy rates have the necessary literacy to match changing job requirements?
2. What percentage of workers themselves perceive they have a need for literacy or foundational skills improvement?
3. Do demographic variables such as age, educational attainment or occupational classification of the learners influence the need for skills improvement?
4. Are classes designed to improve worker skills in reading and mathematics effective for company performance needs?

Methodology

The company and its workers. A high technology company manufacturing component parts of computer disk drives was the site of the study. The company holds 60% of the world market share of its product line and in 1994 grossed \$238 million in sales. The plant employs 3300 workers in Minnesota and South Dakota and is opening a new plant in Wisconsin. Three divisions were selected for this study as being critical to company manufacturing. These divisions were the ones where the company was altering the mode of production. One hundred and eight workers were engaged in technical jobs making precision parts used in computer disk drives. A second segment of 37 skilled workers from the tool and die trades worked at a branch of the plant in an adjoining state and 89 unskilled maintenance workers performed a variety of janitorial and waste disposal functions. The technicians were involved in the actual production of the suspension parts and were required to use statistical process control monitoring and evaluation techniques. The workers were on average in their 30's (See Table 1). The maintenance workers and skilled crafts group were older. The workers were predominantly male. This predominance of males reflects national trends where women are less represented in assembly line manufacturing jobs and the skilled trades. The group all had some post secondary education with 13 plus average years schooling.

Assessing the Need for Reading, Writing and Mathematics An interview questionnaire was developed in consultation with a workplace advisory committee consisting of workers, human resource personnel, and the researchers. The questionnaire had three sections. The first section asked 26 questions about training, workers' perceived need for basic skills improvement, interest and importance of basic skills in their current jobs, and the need both they and other workers might have for basic skills brush-up. Workers were asked if they saw their own skills as adequate to their jobs, and what classes, if any, they desired to upgrade their reading, writing and mathematics. Respondents were asked to rate interest and importance on a one to ten point scale, with 10 being the most important.

The second section of the questionnaire collected relevant demographic data on participants relating to age, years of education, and job experience. A total of 224 workers were interviewed, and they filled out questionnaires in small group sessions.

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Basic Skills Testing The Adult Basic Learning Exam (ABLE) test was selected as a screening measure to identify those workers with less than an eighth grade level in reading or mathematics. The ABLE meets accepted psychometric requirements, and is easy to administer, especially with larger numbers. The test is untimed and the reading comprehension and mathematics subtests take less than 30 minutes each for most adults. It also looks "adult". The only other standardized test, the Tests of Adult Basic Education (TABE), is more academic in content, is timed, and is more difficult to administer. Level 2 of ABLE which measures grades 4 through 8 was selected as the level most appropriate to identify those workers who fall into Carnevale's (1990) high risk group grades 4 through 8. Reading and mathematics scores for 233 individuals were obtained. The workers' perceptions of the need for literacy skills were then compared to actual scores on a standardized test (ABLE).

Assessing the reading, writing and mathematics needed to perform each occupation. A systematic collection was made of the reading, writing and math skills currently used in each occupation. Individual interviews were conducted with 10% of the workers who were asked to bring samples of all the reading, writing and mathematics they used on their jobs. There were then asked to evaluate the importance, (very important, moderately important, or unimportant) and frequency of use (daily, weekly, or less) of each document. Lists of the materials and the importance of each set were checked with supervisors who were in agreement that all materials involving reading, writing, and mathematics were included. A readability and comprehensibility analysis was done on each document and the relevant reading grade levels and mathematical skills were identified. Writing skills were listed separately by type.

Setting Up Foundational Skills Classes and Evaluating the Results Once the workers had been tested and the skill levels of the various occupations established, the foundational skill classes were set up. Customized math and reading courses were offered to employees by the local technical college. Curriculum was targeted to the precise skills needed. The reading class was taught twice a week for periods of 90 minutes over a period of 7 weeks. Fractions and decimals were the most needed mathematics skills. All skills were taught in a work related context. Work was individually paced. The mathematics class consisted of 13 90 minute classes for a total of 19.5 hours. Test-retest results using standardized tests and questionnaires, to assess the satisfaction of the participants who completed the program were analyzed. In addition, interviews were conducted with management and the educational provider to determine their overall satisfaction with the program.

Results

How did Workers Perceive the Need for Foundational or Basic Skills?

Workers felt foundational skills were important on the job and were interested in taking classes. When asked how likely they were to attend such classes if offered, the average response was 8 on a 10 point scale with 0 as no possibility of attendance and 10 a certainty (See Table 1). The assembly workers and tool and die workers saw reading, mathematics and writing as most important (between 7 and 9 on a 10 point scale.) The maintenance workers rated each skill slightly lower (See Table 1). All workers were correct in their observation that mathematics was more needed in terms of skill upgrade than reading. More participants expressed interest in mathematics classes than in reading (See Table 1). The group with the lowest scores in reading (maintenance) also expressed least interest in taking reading classes.

Table 1: Reading and Mathematics Test Scores and Interest in Classes

Occupation	high-tech assembly	mainten- -ance	tool & die
Average age	30	35	37
Sex	m.63 f.45	m.89 f.0	m.24 f.3
Years school	13.4	13	13
Reading level (ABLE)	12+ range 3.2 -12+	12+ range 4.0-12+	12+ range 4.9-12+
Math level (ABLE)	10 grade range 5.9 -12+	9 grade range 4.0-12+	11 grade range 5.4-12+
Importance reading on job* 1-10 scale	8	7	8
Importance math on job* 1-10 scale	8	6	7
Importance writing on job* 1-10 scale	9	7	8
% intend to retrain	44%	50%	62%
% interest in reading class	46%	27%	59%
% interest in writing class	55.5%	34%	66%
% interest in math class	74%	50%	70%
n =	108	89	27

The Literacy Demands of the Jobs. The analysis of work related materials indicated that the most important and frequently used reading materials required a minimum of an eighth-grade level to understand them. Mathematics skills required were higher and equated to a ninth-grade level of achievement.

The most important and frequently used reading material among high technology employees measured above an 8th grade difficulty level. These materials constituted the day-to-day materials

used in performing the job. Some less frequent reading material measured a 10th to 12th grade level. Reference material was used less frequently and tended to have a far higher reading level. The employee handbook was infrequently used and reading at a 12th to 13th grade level. The training manual was frequently used, and required a 12th to 13th grade level.

Basic math skills on the job involved addition, subtraction, multiplication and division. Statistical process control also required knowledge of decimals, calculation of averages, means and ranges using positive and negative numbers, knowledge of charts, and the ability to plot graphs.

Most writing involved charting and filling out forms. These tasks are done on an daily basis and are very important to the job. Some forms required a sentence or two of explanation to be written.

Tested Reading and Mathematics Levels Employees were much more likely to have skills that fell below criterion levels in mathematics (32%) than in reading . Table 2 shows the tested reading and mathematics results. Only a small percentage needed help to improve their reading above the standards suggested by an analysis of their jobs. Of 233 workers only 19 (8%) fell below the 9th grade level.

Table 2: Standardized Reading and Mathematics Test Results

Reading test results

4 (2%) tested below 6.0 grade (level only one below 4th)
 15 (6%) tested between 6 and 8 grade
 18 (8%) tested between 9th or 10th grade level
 10 (4%) tested at the 11th or 12 grade level
 186 (80%) tested post high school.

Math results

10 (4%) tested at between grades 4 and 5
 2 (1%) tested at grade 6
 21 (9%) tested at grade 7
 23 (10%) tested at grade 8
 32 (14%) tested at grade 9
 34 (15%) tested at grades 10 or 11
 31 (13%) tested at grade 12
 80 (34%) tested above grade 12

N=233

The higher proportion of employees needed to improve mathematics is consistent with the findings in the NALS Report on literacy levels of the general population (NALS 1993). The American population has lower mathematics levels than reading. Mathematical literacy, unlike reading skill, erodes if not used.

The actual numbers of workers in need of foundational skill training is in contrast to findings on the literacy level of American adults as a whole. Only 8% of workers needed help with reading, and 24% needed help with mathematics (See table 2 above) . Functional illiteracy in the general population is estimated at between 20% and 30% (NALS 1993), depending on the definition of functional literacy and type of measure used. In the workplace, however, Hart-Landsberg and Reder (1993), found six to eight percent of workers in need of basic skills in a car manufacturing plant in the process of adopting a quality systems approach. It is difficult to make any direct comparisons between this study and theirs due to variations in the type of reading assessment used. Employees in the Landsberg Reder study were asked to read job related materials and judged by their team leaders as needing or not needing improvement. We used a standardized generic reading test and made judgments based on the measured grade levels of the material workers read on the job. We allowed for the estimated advantage experienced workers would have in reading materials they are familiar with. Mikulesky (1994) estimates experienced workers read materials up to two grade levels above their tested reading skill levels because of the familiarity with the concepts and jargon. In addition, the educational levels of the two groups of workers were different. Of the Hart-Landsberg workers, 20% had neither a GED nor high school diploma; all workers in our sample reported graduating from high school. Employees with the lowest skill

levels ended up handling the most dangerous work such as handling toxic waste and were least prepared to handle the reading associated with their job.

Results of the Reading and Mathematics Tutoring Program

Skills improvement was more marked and easier to document in mathematics than in reading. The original recommendation from the basic skills survey was that brush up classes be offered to individuals with reading skills below grade eight and mathematics skills at below grade nine. The original survey showed 42 individuals at this level in mathematics. Nine more individuals were identified at below grade nine and 12 individuals with mathematics skills in the ninth grade were added to the group (total 63). The mathematics class consisted of 13 ninety minute classes for a total of 19.5 hours.

The average grade level pre-test score was grade eight. Post-test scores, ABLE level 3, Form F, equate to a post high school level. Seven participants did not complete post-testing due to illness or unavoidable absences. All employees improved their scores. The final results showed only two employees at below grade eight in mathematics and four below grade nine. Two remained below grade 10. Only two employees did not make significant progress in mathematics as shown by the pre and post tests and remained below grade eight. This lack of progress could be due to either test anxiety or to a math disability.

Some of the dramatic gains can be accounted for by the fact that employees who are out of school a number of years tend to become rusty and forget the math they learned in school. A refresher course quickly brings this knowledge back. It is unlikely that these gains would be sustainable over the long haul. In addition, the standard error measurement on the ABLE, as in all adult tests, is fairly large making gains less easy to assess (Park, 1992). Even so, the gains in mathematics were significant.

Sixteen of 19 employees attended the local technical college for classes in work related reading. The reading class was taught twice a week for periods of 90 minutes over a period of 7 weeks. The length of the class made retesting using standardized tests a problem. As has been noted above the standard error measurement on the ABLE translates into almost one grade level, thus the chance of showing gain in 10.5 hours is small. Also the curriculum taught was entirely work related. The teachers felt gains could be better assessed using a test of work related reading. All 16 participants showed greatly increased mastery of work related instruction sheets. All expressed high levels of satisfaction with the program.

Independent interviews with management and education providers by researchers for NCRVE on completion of the program showed all parties were satisfied with the program (Lewis and Griggs, 1995).

Conclusions/Point of View

The case for workplace mathematics is strong while relatively few workers (8%) needed help in reading. This finding contradicts the conventional wisdom that the need for workplace reading programs is universal. Findings in reading are similar to the Hartsberg Reder study using very different techniques to identify skills-poor workers on a smaller scale. The mathematics findings are new.

Classes in mathematics showed significant improvement in a relatively short time. Research using computer aided instructional delivery of mathematics shows better results with reading than with mathematics in general adult populations. Improving workplace reading skills is a slower process and may be inseparable from a cognitive understanding of the tasks where the reading is used. Gains of less than one grade level were reported for classes in this study. In addition, instrumentation has traditionally been poor. It is no surprise that measuring workplace reading improvement is problematical using standardized tests which tend not to measure what is taught in customized workplace reading programs. Developing work related tests is expensive and the validation process difficult.

Workplace literacy programs are not a panacea. It may be more cost effective to focus on a limited number of areas in terms of skill improvement and to rewrite workplace documents which reach high levels of incomprehensibility. This common sense approach has yet to be

validated by research. Rewritten materials have been introduced into the workplace but data that has not yet been collected related to the overall effect of document improvement on company performance. A method of relating workplace literacy to productivity currently is under discussion.

Finally, the following quote from Carnevale has yet to be validated. "The workplace is changing and so are the skills that employees must have in order to change with it. Many employees, however, do not have the basics essential for acquiring more sophisticated technical skills. While deficiencies in basic skills are not a new problem, they are a growing one. A challenge is emerging from a volatile mix of demographic, economic and technical forces. Combined these forces are driving the nation towards a human capital deficit" (Carnevale, Gainer, Meltzer, 1990).

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Essential Elements of Work: A Factor Analysis of the Occupational Work Ethic

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The occupational work ethic has been quantified as the result of a factor analysis of data from a large sample of industrial employees using the Occupational Work Ethic Inventory (OWEI). This analysis reveals four factors with items that can be used in training programs for instruction in work ethic components. The factors identified were working well with others, striving for advancement/success, being dependable, and unconditional acceptance of duty.

The work ethic is a cultural norm that places a positive moral value on doing a good job and is based on a belief that work has intrinsic value for its own sake (Cherrington, 1980; Quinn, 1983; Yankelovich & Immerwahr, 1984). The work ethic is a secularized construct derived from Weber's (1904, 1905) Protestant work ethic (PWE) theory. The PWE, asserting that Calvinist theology encouraged accumulation of wealth, has been widely used as an explanation for the success of capitalism in Western society. Over the years, however, attitudes and beliefs supporting hard work have blended into the norms of Western culture, and are no longer attributable to a particular religious sect (Lipset, 1990; Rodgers, 1978; Rose, 1985).

Work ethic is an often mentioned attribute employers want their employees to have, but one they often say is hard to find. Boardman (1994) reported the efforts in one community in response to employer complaints that they were "unable to locate employees who were reliable, drug-free, motivated, and possessing a work ethic. Five years later, after establishing programs for technical preparation, apprenticeships, Partners in Education projects, curriculum review, mentoring programs, and employability certification, employers still said they were unable to find a dependable work force.

The work ethic was also identified as a factor that employers were seeking in job applicants in a study by Stevenson and Bowers (1986). Based on interviews with persons involved in hiring for 60 different companies throughout Ohio, positive work attitude was rated as essential by 40 of the 60 respondents and was rated as advantageous by the other 20. Skills of the job, basic mathematics, writing, speaking, reading, computer literacy, people skills, appearance, and personal life skills were also rated, but only *reading*, selected as essential for 43 of the 60 firms, was rated as a more highly valued quality. When a question was framed to ask what was the number one worker quality needed, 32% selected skills on the job and 30% selected positive work attitude. The next highest rating for this item was people skills at 10%.

Of the 60 companies who participated in the study by Stevenson and Bowers (1986), none of them answered yes for positive work attitudes on an item labeled *company will train*. In other areas of preparation for work, if schooling falls short, employers are prepared to provide remediation. In the area of personal qualities, however, industries fail to provide training.

Research-based teaching and career development strategies are needed to strategically target specific qualities to be cultivated. Previous research has identified numerous affective characteristics considered desirable for working people. Beech, Kazanas, Sapko, Sisson, and List (1978) identified 63 affective work competencies considered important by industry and educators and clustered them into 15 categories. Petty (1993), building on the line of research conducted by Kazanas, identified 39 work ethic descriptors and developed the Occupational Work Ethic Inventory (OWEI) based on this work.

The purpose of this study was to identify a short list of focused factors which capture the essence of work ethic. The items generated provide a research based guide for development of

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instructional materials and activities for encouraging and facilitating personal qualities related to work ethic.

Method

Population and Sample The population for this study consisted of workers in public and private businesses and industries in the southeastern United States. Respondents from a broad cross-section of occupations and representative of a full range of ages and work experience were acquired. To effectively identify a sample for the study, a list of 1012 businesses and industries was compiled using industrial directories and area telephone books.

The research design used in this study was ex-post facto with data collected using the survey method. The instrument used to collect data in this study was the Occupational Work Ethic Inventory (OWEI), developed in 1990 by Dr. Gregory C. Petty of the University of Tennessee, Knoxville. Petty (1991) developed the OWEI to provide a concise, but accurate measure of work ethic endorsement by building on extensive prior research related to work ethic. A panel of experts was used to select the list of items included on the instrument and the process followed was similar to one used by Kazanas (1978) in his development of the Affective Work Competencies Inventory and reported by Petty and others (Petty, Kazanas, & Eastman, 1981).

Data Analysis The 50 items contained on the OWEI represent key work ethic and work attitude concepts identified from numerous previous studies. Petty previously developed subscales for the instrument using a content analysis and a panel of experts. Many of the items on the instrument, however, are quite distinct and collapsing the list into manageable groupings was problematic. For purposes of this study, exploratory factor analytic procedures were used to identify the desired explanatory concepts to provide a more objective, statistically based assessment of the items.

To extract the initial factors, a principal-components analysis was used. To eliminate error variance that would be included along with common variance and specific variance at this stage, Kaiser's criterion was applied prior to factor rotation, thus retaining only those factors with an eigenvalue of 1.0 or greater. Factor analysis is a technique for achieving parsimony by identifying the smallest number of descriptive terms to explain the maximum amount of common variance in a correlation matrix (Tinsley & Tinsley, 1987). Orthogonal rotation using a Varimax procedure was employed in this study to maximize parsimony in the final solution. Extracted factors were examined using a content analysis to find the most concise list of items representative of the data collected.

Results

The purpose of this study was to identify a concise list of constructs representative of work ethic as measured by the OWEI. Using squared multiple correlations as the initial communality estimates, principal-components analysis of the data yielded four factors which met the Kaiser's criterion to be retained. To further refine and focus the results, however, orthogonal rotation using a Varimax procedure was used to compute solutions with from 4 to 8 factors. These factor matrices were then examined to determine which was most appropriate to provide a meaningful and concise list of constructs representative of the issues and problems included in the study.

A four-factor solution was suggested by the analysis of data. The factors identified were *working well with others*, *striving for advancement/success*, *being dependable*, and *unconditional acceptance of duty*. Collectively, these factors explained 49 of the 50 items contained on the OWEI and accounted for 19.5% of the total variance. While the ability of a short list of factors was limited in its capacity to embody the meaning of the 50 items on the OWEI, the factors developed provide a practical focus for efforts to assess or influence key work ethic characteristics.

Tables 1 through 4 provide eigenvalues, item means, standard deviations, and the actual items which loaded on each factor. Only those items with a factor loading of .30 or greater were

retained for each of the factors identified. The .30 level is a generally accepted minimum factor loading because it indicates that approximately 10% of the variance for a correspondent variable has been explained by a factor (Tinsley & Tinsley, 1987).

Factor 1. Working well with others. This factor was comprised of items related to interpersonal relationships with other people. The items which loaded here were related to personal characteristics which would facilitate good working relationships and would contribute to job performance in a setting where cooperation was important. One item, stubborn, had a negative loading which met the criteria to be retained. Negative items of this type serve to clarify what the factor is not.

Table 1.

Variable Loadings and Item Means for Factor 1: Working well with others.

Loading	Item Mean	SD	Item
.74068	6.08	.95	courteous
.72589	6.17	.89	friendly
.71149	5.83	.94	pleasant
.68906	5.76	.96	cheerful
.68017	6.01	1.00	considerate
.60499	5.84	1.01	likeable
.60170	6.12	.85	cooperative
.56281	6.12	.90	helpful
.50302	5.91	1.05	devoted
.48762	6.20	.93	loyal
.45423	5.88	1.08	well groomed
.41463	5.22	1.29	patient
.41315	6.09	1.04	appreciative
.36890	6.23	.98	hard working
.32102	5.92	1.12	emotionally stable
-.31844	3.41	1.50	stubborn

Factor 2. Striving for advancement/success. The items which loaded on this factor were descriptive of characteristics which would facilitate "moving up the ladder" on a job and not being satisfied with "status quo" performance. Some of the descriptors which loaded on this factor also encompassed the concept of sticking with a job situation that might not be going smoothly.

Table 2.

Variable Loadings and Item Means for Factor 2: Striving for advancement/success.

Loading	Item Mean	SD	Item
.61113	5.50	1.11	perceptive
.55327	4.96	1.33	initiating
.55115	5.75	1.21	ambitious
.53415	5.84	1.01	resourceful
.53054	5.86	1.03	productive
.52442	5.85	.97	effective
.50795	5.77	1.10	efficient
.48981	5.59	1.08	enthusiastic
.47290	5.62	1.16	persistent

.46799	5.94	1.12	dedicated
.44452	5.70	.92	accurate
.43614	5.99	1.05	conscientious
.37291	5.59	1.38	independent
.35297	5.85	1.02	adaptable
.34482	5.19	1.42	persevering
.32611	5.50	1.32	orderly

Factor 3. Being dependable. This factor was made up of items which had to do with fulfilling the expectations and the implicit agreement to perform certain functions at work. The combined meaning involved at least meeting the minimum expectations for satisfactory job performance, but did not necessarily include going "beyond the call of duty."

Table 3.

Variable Loadings and Item Means for Factor 3: Being dependable.

Loading	Item Mean	SD	Item
.61377	6.26	.92	following directions
.59319	6.14	.98	following regulations
.57285	6.35	.92	reliable
.56285	6.34	.90	dependable
.47937	6.08	.92	careful
.43073	6.52	.90	honest
.36902	5.79	1.18	punctual

Factor 4. Unconditional acceptance of duty. All of the items which loaded on this factor were stated in the negative on the OWEL. All of the reversed items on the instrument, however, were not included under this factor. Careful analysis of constructs represented by these items showed that they related to the acceptance of job duties and responsibilities. A worker who was characterized by these descriptors would either be derelict of duty or would exhibit only conditional acceptance of the requirements of the job.

Table 4.

Variable Loadings and Item Means for Factor 4: Unconditional acceptance of duty.

Loading	Item Mean	SD	Item
.61661	2.24	1.51	hostile
.60314	2.03	1.28	rude
.55391	2.65	1.70	devious
.53205	2.35	1.48	selfish
.50666	2.00	1.43	irresponsible
.50173	2.34	1.47	careless
.46487	2.22	1.52	negligent
.39039	2.84	1.41	depressed
.34719	2.61	1.68	tardy
.31060	3.86	1.90	apathetic

Conclusions

The key constructs of the occupational work ethic as measured by the OWEL reveal important insight into important factors of job success. As with any performance criterion, these factors can be taught. Unfortunately, little evidence exists to support a measured change in behavior as a result in teaching of these performance factors. However, the identification of the factors as demonstrated with this study is an important first step.

With a performance model *factor 1, working well with others*, would be treated by referring to specific human performance factors such as *greet other workers when they first meet*. Or since this factor was comprised of items related to interpersonal relationships with other people, it could relate to *responds cooperatively in team activities*. These items were primarily related to an individual's personal characteristics which would facilitate good working relationships and would contribute to job performance in a setting where cooperation was important. Another performance item would be to *not stubbornly cling to personal idea without compromise*.

The second factor, *striving for advancement/success*, appears to describe performance descriptors of ambition or other personal career development characteristics of human resource development. Human performance factors to consider here would be items such as *desires to move up the ladder* on a job and not being satisfied with *status quo* performance. Some of the descriptors which loaded on this factor also encompassed the concept of sticking with a job situation that might not be going smoothly.

Performance factors to consider with *factor 3, being dependable*, are items which deal with fulfilling the expectations and the implicit agreement to perform certain functions at work. The combined meaning involved at least meeting the minimum expectations for satisfactory job performance, but not necessarily include going "beyond the call of duty."

The fourth performance area, *factor 4, unconditional acceptance of duty*, focused on the negative items of the OWEL. However since all of the reversed items on the instrument were not included under this factor, the items appear to be related to the acceptance of job duties and responsibilities. A worker who was characterized by these descriptors would either be derelict of duty or would exhibit only conditional acceptance of the requirements of the job. Job performance training should focus on the negative impact of a lack of understanding of cooperating with co workers and working as a team member.

Possible implications from this study is the development of strategies for teaching the occupational work ethic. Just as a job analysis reveals components of necessary job skills, this factor analysis of the occupational work ethic reveals necessary work habits, values, and attitudes that should be and could be taught from a performance base, to employees.

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Towards an Ecology of Soul In Work: Implications for Human Resource Development

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An ecology of soul in work involves understanding the deep and holistic relationship between the worker and the work environment. It is about how this relationship is experienced, and the meaning we make of our lives as workers. Within this perspective, HRD practitioners are called to attend to the dynamic, transactional nature of our relationships, and to the unconscious sources of energy within the individual and the collective which animate life within the organization.

Over the last five years, we have witnessed a proliferation of books and articles on matters of spirit and soul in organizational life. Publications such as *Reawakening the spirit in work*, (Hawley, 1993) *Spirit at work* (Conger, 1994), *In the spirit of business* (Roszak, 1992), *The soul of a business* (Chappell, 1993), and *The heart aroused: Poetry and the preservation of the soul in corporate America* (Whyte, 1994) reflect a growing concern with what has come to be called the "spirituality of work." Among the most prominent issues within this discussion relevant to the practice of HRD is the meaning of work in our lives and its organization and structure. As Aktouf (1992) argues, "the human being is, by definition and necessity, a being whose destiny is meaning, intentions, and projects...a subject whose being is meaning and which has need of meaning" (p. 415). A spirituality of work draws our attention to the ways in which individuals *experience* work, its conditions, structure, organization, and its relation to the individual worker. Similar to the socio-technical systems perspective (Ketchum & Trist, 1992), this literature emphasizes the interactive nature of the relationship between worker and context. While this theme is prevalent in much of the recent "reformist" movement in business, a spirituality of work directs us more to matters of soul than strategy and technique.

The idea of soul (Moore, 1991; Sardello, 1992) has become a powerful but dramatically different lens for viewing organizational (Whyte, 1992) and individual life (Sinetar, 1987). Soul invites us within the spaces that make up the interconnections among the work, the workers, and the context or environment, to both the pain of work as well as its joy. Soul is a way of seeing how our inner lives are intimately and inherently joined with the outer context. Grounded in the notion of work as inherently meaningful, the goal of an ecological approach to work is to bridge the gulf between the psychological and the organizational, to see the needs of the individual and the workplace as a continuum, to understand the "inner life" as intimately and deeply connected to and embedded within an "outer life." This perspective implies apprehending our lives as workers far different than the analytic or rational models which dominate much of HRD practice.

The Problem of Meaning in Work

A remarkable number of American workers report feelings of dissatisfaction with what they do for a living (Sinetar, 1987). Laden with the responsibilities of being task-oriented and productive, their lives fill with the needs of every-day life:

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"Everywhere I go it seems people are killing themselves with work, busyness, rushing, caring, and rescuing. Work addiction is a modern epidemic and it is sweeping our land" (Fassel, quoted in Fox, 1994, p. 26). In his study of working men and women, Terkel (1972) vividly portrays how work can and does debilitate the human spirit:

This book, being about work, is, by its very nature, about violence - to the spirit as well as to the body. It is about ulcers as well as accidents, about shouting matches as well as fist fights, about nervous breakdowns as well as kicking the dog . . . (p. xii)

During a recent blizzard that brought worklife to a standstill on the northeast coast of the United States, a bank worker, playing in and enjoying the snows of New York's Central Park, was asked by a National Public Radio reporter what she would be doing were it not for the blizzard. With a downcast tone in her voice, she bluntly replied "Working...bored to death." When we fail to use our work as fully as possible for our own development, enrichment, and sense of contribution, or when the nature of our work's organization and structure makes such outcomes difficult, we become bored, frustrated, constrained, and dulled by what we do, robbed of energy and satisfaction.. Our co-workers, neighbors, even our own experiences, provide abundant examples of how such frustrations are manifest: inattention to our work, clock watching, absenteeism, use of alcohol or drugs to cope with "work stress," vague feelings of restlessness, irritability, and discontent. Worldwide, managers and workers lament a frightening decline in commitment and loyalty—both in terms of worker loyalty to an organization, and an organization's loyalty to its workers (Kanter, 1991); and workers increasingly see their work as a never-ending struggling demanding they prove their worth constantly lest their names be on the next batch of pink slips (McKnight, 1984). Organizations tend to focus on behavioristic strategies to repair or correct what are generally seen as "worker problems." Such attempts can be readily seen in the pervasive use of such programs and strategies as work redesign, performance management systems, or re-engineering. Though the long-term effects of such efforts remain to be seen, evidence suggests these efforts often produce heightened levels of anxiety, tension, depression, anger, and fatigue among workers (Ketchum & Trist, 1992).

Work can, and too often does, serve as a force of alienation and dehumanization in one's life (Aktouf, 1992; Hawley, 1993; Ketchum & Trist, 1992; Terkel, 1972). For many, work is seen as meaningless and often boring or dreadful, and workers gradually slip into a sense of "self-estrangement" (Aktouf, 1992). Aktouf argues that "Alienation from work is the heart of the problem of workers' commitment and motivation" (p. 418), a theme echoed by more "mainstream" theorists such as Ketchum and Trist (1992) and others. Even within HRD, typically perceived as the organizational domain most concerned with the "human issues," we encourage this sense of alienation by viewing the organization as an inanimate form, a mechanistic system involving the input, transformation, and output of resources and human capital. Not surprisingly, then, individuals attempt to find meaning for themselves apart from their work, to value work primarily as a means to live. Increased work means increased purchasing power, resulting in what Fassel (1990) refers to as the "overworked American." Rather than indicating a sense of loyalty or commitment to one's work, this reflects a need to derive meaning from consuming and not from one's work—creating a lifestyle, rather than creating a life.

At one level, this problem of meaning in work could be considered a psychological issue, involving personal choice and personal decisions concerning what we will make of our lives, and not especially relevant to organizational or HRD concerns. There is evidence, however, that this is but one dimension, and that the ways in which we are socialized and culturalized in specific groups also impacts the outward expression of our inner lives. The problem of meaning in work extends beyond the psychological and is clearly linked to the ways in which work is structured and organized. Ketchum and Trist (1992) argue that "Commitment to work is still central to people's lives, but the commitment is conditional on the work experience" (p. 14-15).

Some managers are beginning to view such phenomena as poor work quality, lack of commitment, "Monday blues," or increased workplace violence as manifestations of a workforce which fails to view work as a vital component of their lives. They have implemented a number of strategies to address these concerns, including participatory management techniques such as self-management teams and total quality improvement efforts. Within these efforts continues to lie the

assumption that people are not, in and of themselves, motivated to work, and that systems and controls must be implemented in order for people to work productively. Aktouf (1992) raises a critical, and often overlooked, consideration: rather than this technical focus on learning "how" to motivate workers, he asks whether it wouldn't be better to spend time understanding "why" the worker is so little motivated. As he points out, "to raise the question in this way . . . is to question the very meaning of work" (p. 420).

Work as Right Livelihood

Work as right livelihood is an ecological view of work incorporating the contexts and processes of work, its structure and organization, as well as the psychology of the individual worker (Csikszentmihalyi, 1990; Fox, 1994). Such assumptions are embedded within existing frameworks of HRD such as self-directed work teams, job enrichment, and organizational democracy (Bolman & Deal, 1991); companies experimenting with radical restructuring (Aktouf, 1992; Galen & West, 1995; Semler, 1993); organizational transformation (Adams, 1984; Fletcher, 1990; Handy, 1994; Ketchum & Trist, 1992); and the literature on a spirituality of work (Bolman & Deal, 1995; Chappel, 1993; Conger, 1994; Hawley, 1993; Roskind, 1992). A number of organizations recognize the need to attend to issues of meaning and how workers experience work, and we are witnessing an emerging emphasis on the uncovering of a vital workforce, a workforce that works and creates with a spark of fire (see for example Galen & West, 1995). At one time, and even continuing in many sectors today, one's work was considered an expression of one's spiritual life, carefully chosen, with skills and craft cultivated and nurtured over a lifetime. Work as vocation, or calling, was seen as our demonstration of commitment to community and to the welfare of others. As the outer expression of our inner lives, work was often viewed as the central domain for one's human development (Welton, 1991). These attributes characterize work as right livelihood, a notion at the center of a spirituality of work. In this view, work is a vital component of the human experience, laying important building blocks for one's sense of self.

Work as right livelihood conveys a particular relation of our selves to our work, and reflects a deep, inner capacity to see meaning in what we do, to approach our work as an expression of our inner self. It is about making our work an end in itself, rather than a means to an end (Corson, 1991; Hawley, 1993; Sinetar, 1987). This "way of being" at work moves us towards our fullest participation in life, and embodies self-expression, commitment, mindfulness, and conscious choice (Fox, 1994; Hawley, 1993; McKnight, 1984; Sinetar, 1987). Right work responds to an essential human need: to be a part of something larger than oneself, to feel connected with others, to feel needed and valued. Having a sense of a transcendent purpose—one that goes beyond oneself—provides us with a source of enthusiasm, energy, and goal (McKnight, 1984). This is the essence of soul in work. In contrast, work without meaning is characterized as tired, ego-centered, competitive, manipulative, and cynical. The ways in which a company frames the nature of work and the role of the worker severely limits the extent to which we can bridge the inner life of the worker and the outer life of the organization. When we seek to develop and motivate the work force, to put life back into our lives—to work with soul—we are searching for a source of vitality. The dynamic and interactive nature of the relationship between worker and work demands that we attend not only to strategies for increased production and quality, but to the ways in which we work—the ways in which we experience and make meaning of our work and of our selves as workers. To fully achieve this paradigmatic shift becomes a matter of developing an ecology of soul in work.

Honoring the Soul in Work

Facing the workplace and our work with soul is reflected, to greater or lesser degrees, in a number of conceptual and ideological focuses within existing organizational development literature. Each of these efforts contribute to an overall understanding of soul in work. For purposes of discussion,

we refer to these efforts as humanist reforms, radical humanism, and the spirituality of work movement.

Humanist Reform Efforts One of the most popular and pervasive attempts to address the problem of meaning in work has been the introduction of management techniques and strategies based on the "Deming" philosophy (Deming, 1982). In essence, Deming's quality management ideas were a comprehensive approach to employee spirit and involvement. Many of his 14 management points reflect both a humanist influence and a response to the problem of meaning in work, including a constancy of effort, the transformation of Western-style management, a critical eye towards one's work, the driving out of fear, and the removal of barriers that rob workers of pride in workmanship. Deming's approach emphasized participatory management styles and numerous human resource innovations; the heart of his philosophies for continuous quality improvement rested on the premise that organizational structures and procedures must appeal to workers' talents, pride, and innate desires to work together, to cooperate, collaborate, and to create.

Characteristics of a humanist perspective include, but are not limited to, less worker constraint, enhanced self-control over one's work, an environment of trust conducive to risk-taking, increased autonomy and responsibility, and the valuing of intuition, creativity, and emotion (see for example Bolman & Deal, 1991; Bowen & Lawler, 1992; Larkin, 1986). Tenants of quality improvement rest on the need to drive fear out of the organization, constancy of purpose, commitment to a common vision, and the breaking down of structural barriers while affirming the diversity and value of individual contributions. Such attributes are also seen in Senge's (1990) sense of the "learning organization," one which cultivates human capacity through valuing personal mastery, vision, and dialogue. Additional organizational theories and management models (as seen in Bolman & Deal, 1991) reflect similar ideas, such as McGregor's assumptions of human nature and need for participative management, Maslow's recognition of the need for self-esteem and self-actualization, and DeVanna and Tichy's concern for facility size, use of work groups, high levels of interaction with others, integrated diversity, and democratic processes. Many organizations, however, have ignored the philosophical orientation that Deming and other humanists advanced, turning philosophy into technique and strategy and implementing them piecemeal within an organization. Such a cafeteria approach to organizational development appears to have done little to reduce feelings of meaninglessness and discontent among workers (Galen & West, 1995; Ketchum & Trist, 1992), and employees are often suspicious of techniques such as "self-management teams" and "total quality improvement" efforts.

Thus, the humanist reform efforts have consisted of a number of well-intended efforts to address problems of meaning and other related organizational concerns. Despite the call for a thorough reassessment of traditional views of work and the workplace, many "apparently have not seen the need to review the basic conceptual and ideological foundations on which these practices are based" (Aktouf, 1992, p. 408). The behavior of people continues to be viewed as the source of workplace problems (Fox, 1994; Handy, 1994; Hawley, 1993; Ketchum & Trist, 1992). Characteristically, we are tempted to isolate these symptoms as individual problems and eradicate them one by one. This manner of thinking has led to such interventions as the need for motivational programs, the construction of surveillance systems, and the use of penalties and bonuses to discipline or reward.

Radical Humanism Radical humanists seem to have a better sense of the overriding philosophy needed for a revitalized workforce, and perhaps are more in keeping with a sense of soul in work. Drawing from Aktouf's (1992) work with radical humanism, attributes which characterize this effort include a view of humans as being endowed with consciousness, right judgment, and free will; the idea that humans are fundamentally defined by our community and relations with others, who help us shape our sense of self; and that "the heart of the process of dehumanizing 'man' is alienation through work. This idea explains the primordial importance of what takes place, concretely, in the work process" (p. 414).

The more radical perspective advocates the abandonment of management based on authority or on the scientism that is pervasive in the organizational field such as Taylorism, behavioral sciences, or management information systems. Only in this way will we begin to

conceive of practices that permit the development of the worker's desire to belong, to contribute, and to use his or her intelligence and creativity in the service of others. Radical humanists believe such goals can never be achieved so long as the conception and treatment of the worker as an instrument of production, as a "needs-driven mechanism," as a resource to be exploited and monitored, or as a cost to be controlled and minimized, prevails (Aktouf, 1992, p. 411). The humanized firm focuses on the person more holistically, people who are driven by the desire to cooperate and to contribute, who will know how—and be allowed—to think, to react, and to modify, and who are characterized by greater autonomy, and equity. Such changes must be a "lived experience," neither contrived nor commanded, and must involve a change in the rules and the nature of power and control, rather than a change of technique.

The radical humanist perspective illuminates the need for paradigmatic change in the ways in which we think about work and its meaning, due to inherent and inevitable conflicts between capital and labor. The spirituality of work literature, however, seems to subsume these views of both the humanist and radical humanist, but also serves to further illuminate the problem of meaning through its emphasis on the soul of organizational and worklife.

A Spirituality of Work Unlike a prevailing tendency to locate problems of meaning or performance within individual workers, the emerging spirituality of work literature suggests that commitment to work depends as much on the way work is experienced as it does on the individual worker. Spirit and meaningfulness cannot thrive in an environment that induces anxiety and encourages reactivity rather than proactivity. Some organizations are recognizing this need to attend to the more spiritual dimensions of worklife. In a recent *Business Week* article, Galen and West (1995) described companies turning inward in search of a "soul" as a way to foster creativity and motivate leaders. These companies identify how, as a result of downsizings and reengineering, over-worked employees are asking, What does all this mean? Why do I feel so unfulfilled? With this heightened awareness of issues of meaning, there is an emerging emphasis placed on matters of the soul and spirit in organizational life—in the uncovering of a vital workforce capable of continuous adaptation and innovation.

The literature on spirituality of work contributes to our understanding of the need for a "new order" of thinking about work and its organization. However, as De Gaulejac suggests, "Today it is as if the 'new managements' were trying to transform the psychic drives feeding the individual's narcissism into added work and an additional source of surplus value" (quoted in Aktouf, 1992). In other words, this remarkable attention to a spirituality of work is sometimes justified in terms of "value added," denying the very soul that is struggling to survive within the workplace. Rather than seeing the problem as one of soul, many interpret this new emphasis on spirituality as one which suggests new "techniques." Thus, much of the attention to the spirituality of work continues to reflect a preoccupation with strategies rather than the need for a fundamentally different way of thinking about the meaning of work and how this meaning is reflected in organizational structures and processes.

Towards an Ecology of Soul in Work

An ecology of soul in work seeks to provide a framework for honoring the soul, to "arouse the soul," in work. Like the finger of the third ghost in *A Christmas Carol*, the growing concern with spirituality and meaning in our work and in the workplace points imperatively not to new value added techniques or strategies, but to matters of soul. Building on Aktouf's call for a radical humanism in the workplace, we argue that concern for soul in work beckons us to a "new order," a fundamental shift in how we understand the meaning of work in our lives. While Aktouf's analysis significantly contributes to our understanding of the problem of individual meaning in work, soul directs us to the importance of both the inner and the outer aspects of work, and to its collective as well as its individual dimensions (Fox, 1994). In an ecology of soul perspective, we "cease to understand or see ourselves as isolated and narrow competing egos and begin to identify with other humans....and...beyond humanity to include the nonhuman world" (Naess, 1985, p. 67).

Viewing work from this perspective places primacy within the workplace on development and growth of both the individual and community.

The ideas of such writers as Fox (1994), Moore (1991), or the poet spiritualists such as David Whyte (1994) describe that to work with soul challenges the status quo of the Western world. It demands an inner strength and is founded upon ideas of community and connectedness with others. An ecology of soul recognizes and values the interconnection between the quality of the inner work and the outer work we do, an expressed joy in work, and the drive and opportunity to work authentically and with mutual respect. Hallmarks of working with soul include the use of self-organizing systems, the opportunity to work with spontaneity and freedom, and to be treated with life-affirming dignity. There is a need for face-to-face communication, participatory processes, and the opportunity to foster meaningful interpersonal relationships. Both research and anecdotal evidence indicate that worklife is often filled with considerable emotional discomfort and psychic pain, as well as sheer physical pain, and an ecology of soul does not assume the complete elimination of such pain and conflict. Rather, an ecology of soul seeks what to do *with the pain*, unlike most HRD trends which seek to do *something about* pain and discomfort in work. According to Sardello (1992), "political, social, economic, ecological, and technological programs will not alter the condition of the world one wit; they only rearrange what is already given into new patterns" (p. 9). Such a "rearrangement" implies a need for individuals to do their own inner work, to nurture deep meaning with respect to how we direct our energy, but also for business to cultivate an inward organizational consciousness in an environment of openness, safety, and trust.

Implications for HRD Practice

Key concerns for today's leaders are no longer simply issues of task and structure but are issues of spirit and soul (Hawley, 1993). This is not to suggest that issues of productivity, structure, and profits, are no longer critical, but rather that we concern ourselves more fully with the humanness and health of our organizations (1993). Is this unrealistic in the "hard" world of work? Growing evidence from the business world suggests not. Voices of companies embracing spirit and soul within the workplace are rising as a growing number of workplaces begin to understand the importance of the context of work and how workers experience and make meaning of their lives as workers. Examples of such places include international organizations such as Semco (Semler, 1993) and Sun Hydraulics Corporation (Kaftan & Barnes, 1991), the Quebec pulp and paper multinational, Cascades, Inc., and the American plant, Johnsonville Sausage Company (Aktouf, 1992). Other workplaces are also beginning to "experiment" with new work environments that openly speak of soul, such as Boeing, AT&T, Lotus Development, and Medtronic (Galen & West, 1995). Outcomes of such experiments are variable, and critics of course abound. Yet it appears that an ecology of soul is possible, a workplace can promote high productivity as well as transcendent values, and human resource personnel can work to develop people by helping them find transcendent meaning in their work.

We are perhaps not so far from developing an ecology of soul in work as some might think. Similar characteristics are already evident in existing organizational development literature, where changing the status quo demands a more critical and holistic perspective. Senge suggests that we adopt a more Gestalt perspective, in contrast to the analytic and reductionist perspectives that predominate the field, and locate work within contexts that extend beyond the immediacy of the balance sheet and the needs and characteristics of the physical plant. Organizational transformation also reflects this desire to move beyond the constraints of highly technical interpretations of how workplaces are structured and organized. Adams (1984) stresses the multiple perspectives and interconnectedness within a new paradigm which emphasizes an "expanded sense of personal identity and an awareness of the interconnectedness of people in their organizational cultures, and of organizational cultures to each other in the larger environment (p. vi).

Ketchum and Trist suggest that attention needs to be given to attending to and changing the ways in which workers experience work, rather than trying to re-shape or replace workers

themselves. This line of thinking leads to considerations of the nature of work that engenders commitment among employees. Work can provide a means of allowing the varied and complex aspects of our personality to emerge and flourish. Working with soul reflects energy, transcending the ego, cooperation, freedom, and joyfulness, and demands an environment free from fear, guilt, and the perpetuation of self-defeating thought patterns. It involves a total belief system that emphasizes responsibility, accountability, and connectedness—a sense that each worker is an integral part of something larger than him or herself (Fox, 1994; Hawley, 1993; McKnight, 1984; Sinetar, 1987). It means ridding ourselves of the idea that organized groups of people are pieces of property, to be bought and sold according to market price, and as costs and constraints which we instinctively seek to reduce (Handy, 1994).

HRD has long recognized the workplace as a context for fostering worker growth and development, and to enhance organizational effectiveness through the integration of structural, human, and strategic issues and practice. Because of a practice focused on the inter- and intra-unit relationships within an organization, HRD practitioners are well-positioned to cultivate an ecology of soul in work, to become more conscious of the inner lives of our organizations and how workers experience their lives as workers. Moving towards an ecology of soul, we must begin to view the work organization for what it is—a human collective with human characteristics—and tie the organization closer to the human condition, subject to the principles of human existence. Only then can we cultivate an organizational form where candor, symmetry, equity, and sharing provide the grounds for humanizing the workplace (Aktouf, 1992, p. 424).

Conclusion

Meeting the challenges that face the workplace today depends upon the involvement of the many, a fully integrated organization, increased experimentation, the elimination of boundaries, and the free-flowing exchange of communication, information, and knowledge (see for example Aktouf, 1992; Bowen & Lawler, 1992; Larkin, 1986). Cultivating an ecology of soul will assist HRD practitioners to navigate in the face of environmental uncertainty and enhance an organization's ability to absorb change.

Numerous forces are influencing the direction of HRD, including heightened expectations by organizations of workers for decision-making, creativity, risk taking, and adaptation to change, and higher expectations by workers for meaningful work and the right to fully participate in shaping work processes and outcomes (see for example Carnevale, 1991). Rather than continuing our more traditional efforts to eliminate symptoms of meaninglessness in work, what is needed is greater dialogue concerning how to assist organizations to evolve in a way that honors imagination and creativity, personal and collective challenge, and other multifaceted dimensions of an ecology of soul. At its heart, this implies new ways of nurturing organizational development and culture. Before such dialogue can result in any meaningful and practical accomplishment, however, we must increase our understanding of what contributes to a sense of meaningfulness in our work. Certain conditions are necessary to infuse work with soul, to allow an ecology of soul to emerge within our workplaces. To some extent these conditions are illuminated within the spirituality of work and organizational development literature. There is a need, however, to further assess the structures and processes within the workplace that enhance personal growth and development, encourage cooperative and democratic work, that eliminate fear in the worker, and communicate messages that value our intrinsic natures.

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